



LGC NCOE Field Notice 01-2016  
16711/16-002  
07 Jan 2016

## MEMORANDUM

From: J. E. Smith, CDR

To: Distribution

Subj: LNG BUNKERING JOB AID FOR FACILITY TO VESSEL OPERATIONS

Ref: (a) CG-OES Policy Letter 01-15 – Guidance for Liquefied Natural Gas Fuel Transfer Operations and Training of Personnel on Vessels using Natural Gas as Fuel

(b) CG-OES Policy Letter 02-15: Guidance Related to Vessels and Waterfront Facilities Conducting Liquefied Natural Gas (LNG) Marine Fuel Transfer (Bunkering) Operations.

(c) LGC NCOE Field Notice 01-2015, CH-1 – CH-1 to LNG Bunkering Recommendations

1. In April 2015, the USCG Liquefied Gas Carrier (LGC) National Center of Expertise (NCOE) identified the need for and with USCG Headquarters program support established the LNG as a Fuel Workforce Development Committee (LNGFWDC) to identify USCG prevention workforce development needs for the emerging use of LNG as a maritime fuel and LNG bunkering. The LGC NCOE recruited over 40 field and staff subject matter experts (SME) comprised of experienced LNG facility inspectors, marine inspectors, and gas carrier examiners from around the nation as members of the LNGFWDC. The SMEs were divided into two sub-committees, one for LNG fueled vessels and one for LNG bunkering facilities. These groups have identified the highest priority workforce needs and will collectively develop draft deliverables to be used as recommendations for field units. The LGC NCOE is disseminating these recommendations as field notices for local units and industry to utilize on current and proposed projects and for USCG Headquarters program offices to consider as field tested templates.

2. Over the last several months the LNGFWDC LNG bunkering facilities sub-committee has identified the need for a LNG checklist for LNG bunkering operations from a facility to a vessel, as their highest priority. Throughout this timeframe several members of the team witnessed multiple LNG bunkering operations and reviewed case studies from industry and other government agencies around the globe. The bunkering facilities sub-committee used this information along with references (a), (b), and (c) to develop their first deliverable found in Encl (1): a LNG Facility to Vessel Bunkering Job Aid.

3. The LNG Bunkering Job Aid has been field tested at each of the approved LNG Bunkering facilities in the U.S. by local field units and the LNGFWDC. The LNG Bunkering Job Aid can be

used for initial and annual inspections of shore based LNG bunkering facilities and during transfer monitors of LNG bunkering operations from a facility to a vessel.

4. The LNGFWDC is currently developing a LNG Bunkering Job Aid for vessel to vessel LNG bunkering operations and a LNG as a fuel machinery checklist. Both deliverables should be released within the next few months.

5. Comments or questions regarding this job aid should be directed to the chair of the bunkering facilities sub-committee, LCDR Dallas Smith who can be reached by email at [dallas.d.smith@uscg.mil](mailto:dallas.d.smith@uscg.mil) or by phone at 409-723-6559.

Encl: (1) LNG Bunkering Job Aid

Dist: Sector Prevention Departments Chiefs  
Sector Inspection Divisions Chiefs  
Port State Control Branch Chiefs  
Sector Marine Inspection Training Officers  
District (p)  
Area (p)  
CG-ENG  
CG-FAC  
CG-OES  
CG-CVC  
MSC

LNG BUNKERING JOB AID

Facility to Vessel

Name of Waterfront Facility: \_\_\_\_\_

Name of Receiving Vessel: \_\_\_\_\_

IMO or Official Number: \_\_\_\_\_

Date/Time Transfer Started: \_\_\_\_\_

Product: LNG

Estimated Initial Transfer Rate: \_\_\_\_\_

Estimated Maximum Transfer Rate: \_\_\_\_\_

Estimated Maximum Transfer Pressure: \_\_\_\_\_

Date/Time Transfer Completed: \_\_\_\_\_

Y = Yes N = No N/A = Item does not apply to this transfer of LNG C = Corrected on the spot	Facility: (Tank Truck / Rail Car/ Container)				Vessel				Regulatory Cites
	Y	N	N/A	C	Y	N	N/A	C	
									46 CFR 154.1801 (U.S. Flag Vessels) 46 CFR 154.1802 (Foreign Flag Vessels)
1. Verify valid vessel(s) Certificate of Inspection, Letters, Certificates of Compliance.									46 CFR 154.1809
2. Verify compliance with vessel loading & stability manual.									33 CFR 155.720 (Procedure) 33 CFR 155.730 (Compliant) 33 CFR 155.740 (Available)
3. Verify Vessel's transfer procedures (Available to CG, Posted for Crew & Compliant)									33 CFR 127.019 33 CFR 127.307 33 CFR 127.309
4. Verify Facility Emergency Manual ("Examined by COTP")									33 CFR 127.019 33 CFR 127.305 33 CFR 127.309
5. Verify Facility Operations Manual ("Examined by COTP")									33 CFR 156.118 (Facility & Vessel)
6. Verify Advance Notice of Transfer, if required by COTP									33 CFR 127.315
7. Verify preliminary transfer inspection is complete by PICs									46 CFR 35.35-30 (Required & Content) 33 CFR 127.317 33 CFR 156.120 33 CFR 156.150 Vapor Recovery: 46 CFR 35.35-30(c)(1) (Aligned) 46 CFR 35.35-30(c)(2) (Connected) 46 CFR 35.35-30(c)(3) (Electrically Isolated) 46 CFR 35.35-30(c)(4) (Transfer Rate) 46 CFR 35.35-30(c)(5) (Pressure) 46 CFR 35.35-30(c)(6) (Alarms Tested) 46 CFR 35.35-30(c)(6) (Hose Condition) 46 CFR 35.35-30(c)(6) (O2 Level)
8. Verify completion of Declaration of Inspection (DOI) to include Vapor Collection, if necessary									33 CFR 127.301 33 CFR 127.503 33 CFR 155.700 33 CFR 155.710 33 CFR 155.715 (Content of PIC letter) 33 CFR 156.150 46 CFR 31.15-1 (Manned Tank Vessels) 46 CFR 35.35-1 (b), (Unmanned Tank Vessels) 46 CFR 154.1831 STCW Code, Chapter V/3, Reg. A-V/3, Sec. B-V/3
9. Verify PIC Designated & Qualified, MMC/Endorsements									33 CFR 156.120(q),(v)
10. Verify no communication or language barrier									33 CFR 156.120(x) 46 CFR 35.35-20(f)
11. Verify both PICs agree to begin the LNG transfer operation. (Check DOI)									33 CFR 127.319 (PIC) 33 CFR 156.115 (PIC Limitations) 33 CFR 156.120(s)(t) (On site, Guidance, Conduct) 33 CFR 156.160 (Supervision by PIC) 46 CFR 156.120 (aa), (Vapor Collection Operations) 46 CFR 35.35-35 (PIC Duties)
12. Verify PIC in immediate vicinity, Immediately available, Properly Supervising									33 CFR 156.120 (s) (t) (u)(i) 33 CFR 35.05-15 (Watchmen) 46 CFR 35.05-20/25 (Physical Condition)
13. Verify adequate supervision and effective manning in attendance for all operations & emergencies.									33 CFR 127.105
14. Verify that each LNG loading flange is at least 300 meters (984 feet) from:									33 CFR 127.105(b)(1)
a. Each bridge crossing a navigable waterway.									33 CFR 127.105(b)(2)
b. Each entrance to any tunnel under a navigable waterway.									33 CFR 127.311 (a), (4)
15. Verify that each LNG loading flange is at least 15 meters (49.2 feet) from a motor vehicle.									33 CFR 127.315 (a)
a. Transfer piping									33 CFR 127.315 (b)
b. Cargo pressure, temperature & volume									33 CFR 127.315 (c)
c. PIC(s) Conference was conducted & included:									33 CFR 156.120(w)
(1) The identity of the product (MSDS)									33 CFR 127.315(c)(1)
(2) The sequence of transfer operations.									33 CFR 127.315(c)(2)
(2) The transfer rate.									33 CFR 127.315(c)(3)
(3) The duties, location, and watches of each person assigned to the transfer operations.									33 CFR 127.315(c)(4)
(4) Transfer procedures & Emergency procedures									33 CFR 127.315(c)(5) thru(13) 33 CFR 156.120(w)
d. Verify that the transfer connections are arranged to limit the strain on transfer piping system and/or hoses.									33 CFR 127.315(d)
e. Verify each part of the transfer system is checked for alignment to allow the flow to the desired location. (verify vsl & facility are using a checklist)									33 CFR 127.315(e) 46 CFR 35.35-20 (c) (d)
f. Verify warning signs are displayed.									33 CFR 127.113 33 CFR 127.317 (f) 46 CFR 154.1830 46 CFR 35.30 (Warning Signs & Signals) 46 CFR 35.35-20(a)
g. Verify all ignition sources are eliminated									33 CFR 127.315(g) 46 CFR 35.30-5 (Fires, Matches, Smoking) 46 35.35-20(e) (Open Flame) 46 CFR 35.35-20 (b) (No repair)
h. Verify personnel are on duty IAW Operations Manual									33 CFR 127.315(h)
i. Verify lighting & emergency lighting system									33 CFR 127.109 (Type/Spec) 33 CFR 127.319 (b)(4) (On btw sunset & sunrise) 33 CFR 155.790 (Ship Deck Lighting)
j. Verify fixed gas detection system (audio & visual)									33 CFR 127.201 46 CFR 154.1350 46 CFR 154.1345 46 CFR 154.1365 IGF Code 15.8
k. Verify portable gas detector (2 each w/in marine transfer area measuring 0-100% of LFL of methane)									33 CFR 127.203
l. Verify vessel has a portable oxygen analyzer.									46 CFR 154.1360
m. Verify Emergency Shutdown (activated manually, & automatically upon 40% LFL)									33 CFR 127.205
n. Verify Warning alarms									33 CFR 127.207 (amber light/siren visuable 1mile)
o. Verify testing to determine operability:									33 CFR 127.315(i)
(1) The sensing & alarm systems									33 CFR 127.315(i)(1) 33 CFR 127.201 46 CFR 154.1842 (Controls & Alarms)
(2) The emergency shutdown system (ESD).									33 CFR 127.315(i)(2) 33 CFR 127.205 33 CFR 155.780 46 CFR 32.50-35 (Tank Vessel w. pumps on deck) 46 CFR 154.1842 (Controls & Alarms)
(3) The communications system.									33 CFR 127.315(i)(3) 33 CFR 127.111 33 CFR 127.319(b)(1) 33 CFR 155.785 (Two-way, All conditions, Intrinsically safe)
(4) Pressure Test & Record Keeping: Piping system, hoses, loading arms, pressure relieving devices									33 CFR 127.403 (Inspections) 33 CFR 127.407 (Testing) 33 CFR 127.408 (Records) 33 CFR 155.820 (Records)
16. Verify transfer operations are discontinued before electrical storms or uncontrolled fires.(Check DOI)									33 CFR 127.319(b)(3)
17. Verify Electric Bonding.									46 CFR 35.35-5
18. Verify no smoking when LNG present.									33 CFR 127.613 46 CFR 35.35-30(b)(11) 46 CFR 156.120(dd)
19. Verify no fires when LNG present.									33 CFR 127.615
20. Verify No Hotwork unless permitted by COTP									33 CFR 127.617 33 CFR 156.120(dd)

LNG BUNKERING JOB AID												
Facility to Vessel												
21. Verify Cargo Control Station (Location, Access, Controls & Alarms)											46 CFR 154.320	
22. Verify Access to Hazardous Location (Self-Closing Doors, Air-Lock, Alarms, & Air Change)											46 CFR 154.345*	
23. Verfiy Electrical installations in hazardous locations											46 CFR 154.1000 thru 154.1020 (Electrical)*	
24. Atmospheric control (Cargo Tanks/Piping)											46 CFR 154.901 46 CFR 154.1848 (Inerting)	
25. Verify Mechanical Ventilation (Ventilation Supply & Exhaust: Seperated by 32.8 ft and provide 30 exchanges an hour)											46 CFR 154.901 (Cargo Tanks/Pipimg	
26. Verify Gas Fueled Vessel's Storage Tank (Design & Installation)											IGF Code 6.4.15.3 (Type C Tanks) IGF Code 6.5 (Portable LNG fuel tanks) IGF Code 6.5.5; 6.5.7; 6.5.10 (Tank Connections for protable tanks)	
27. Verify Gas Fueled Vessel's Storage Tank Instrumentation											IGF Code 15.3 (Local & Remote) IGF Code 15.4.1 (Liquid Level) IGF Code 15.4.2 (Overflow & Alarm) IGF Code 15.4.3 (Vapor Pressure) IGF Code 6.5.8 (Portable fuel tanks)	
28. Verify Gas Fueled Vessel's Storage Tank Venting											IGF Code 6.7 (Pressure Relief System) IGF Code 8.5.2 (No gas discharge)	
29. Verify Gas Fueled Vessel's Valves & Connections (Local, remote & emergency control shut-off)											IGF Code 8.4 (Manifold: dry-connect, break-away, self-sealing quick release) IGF Code 8.5.3 (Manual & Remote on bunker line) IGF Code 8.5.7 (Interlinked ESD-System)	
30. Verify Gas Fueled Vessel's Storage Tank Piping/Lines											IGF Code 8.2.1.1 IGF Code 8.5.1 (Purging Bunker Lines) IGF Code 8.5.4 (Draining Bunker Lines) IGF Code 8.5.5 (Inerting/gas-freeing Bunker Lines) IGF Code 5.7 (Bunker Lines Location and Protection) IGF Code 9.5.1; 15.5.2/.3 (Bunkering Lines ventilation ducting)	
31. Verify Gas Fueled Vessel's Bunker Station											IGF Code 8.3.1.1 (Location) IGC Code 15.5.1 (Locaton) IGF Code 8.3.1.3 (Spill Response) IGF Code 8.3.1.5 (Hull/Deck Cool Protection) IGF Code 8.3.2.2 (Hose burst pressure)	
32. Verify Cargo Tank (Design & Installation)											46 CFR 38.05-3 (Pressure) 46 CFR 38.05-4 (Nonpressure) 46 CFR 38.05-4 (Marking) 46 CFR 38.05-10 (Installation)	
33. Verify Cargo Tank Instrumentation (Liquid Level Gauging, Alarm, Pressure & Vacumm (PV) Protection, and Temperature)											46 CFR 154.536 (Tank Gauging & Measuring Connections) 46 CFR 154.1300 (General) 46 CFR 154.1325 (Alarm-All tanks) 46 CFR 154.1330 (Alarm-Independent Type C) 46 CFR 154.1335 (PV Gauge & Alarm) 46 CFR 154.1340 (Temperature)	
34. Verify Cargo Tank (Venting, Pressure, Vacuum)											46 CFR 32.55-20 (Tankship) 46 CFR 32.55-25 (Tankbarge) 46 CFR 32.20-5 (PV relief valve) 46 CFR 154.703 (Pressure build up due to boil-off) 46 CFR 154.801 (Pressure Relief System) 46 CFR 154.802 (Alternative Pressure relief Settings) 46 CFR 154.804 (Vacuum Protection) 46 CFR 154.805 (Vent Mast)	
35. Verity Cargo Valves (Local, remote & emergency control shut-off)											46 CFR 154.530 46 CFR 154.1866 (Remote/Quick closing) 46 CFR 38.10-1 (Valves & Fittings)	
36. Verify Cargo Piping (bonding, hull protection, pressure relief)											46 CFR 154.512 46 CFR 154.517	
37. Verify each part of the transfer system is proper length, supported and aligned to allow flow of LNG.											46 CFR 156.120 (b),(c),d)	
38. Verity facility's cryogenic bunker hoses/loading arms are in good condition, tested, properly rigged, and appropriate for the service intended.											33 CFR 156.120(b) (c) (g) (i) (j) (k) 33 CFR 156.170	
39. Verify vessel's cryogenic bunker hoses/loading arms are in good condition, tested, properly rigged, and appropriate for the service intended.											33 CFR 155.800 33 CFR 156.120(b) (c) (g) (i) (j) (k) 33 CFR 156.170 46 CFR 154.551 thru 154.562 46 CFR 154.1858	
40. Verify each part of the transfer system not in use securely blanked.											33 CFR 155.805 33 CFR 156.120(e) (f)	
41. Verify all connections in the transfer system are fixed, proper & leak free.											33 CFR 156.120 (g),(k),(p) 33 CFR 156.130 33 CFR 153.972 46 CFR 35.35.15	
42. Verify remote shutdowns (Machinery for cargo loading, unloading or cooling)											46 CFR.15-20 (TB/ALL)	
43. Verify drains and scuppers/ovbd discharge are closed											33 CFR 156.120 (h)(o)	
44. Discharge equipment: accessable /deployed											33 CFR 156.120 (m)	
45. Containment: required capacity, drained											33 CFR 156.120 (n)	
											* Draft CTAC Minimum Design Std for Barges carring LNG	

<div>USCG Inspector</div> <div><div></div><div>Printed Name</div><div></div><div>Signature</div><div></div><div>Date Signed</div></div>	<div>Supply Facility PIC</div> <div><div></div><div>Printed Name</div><div></div><div>Signature</div><div></div><div>Date Signed</div></div>	<div>Receiving Vessel PIC</div> <div><div></div><div>Printed Name</div><div></div><div>Signature</div><div></div><div>Date Signed</div></div>
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